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book knowledge could write like this. We would inquire whether what we know of the embryology of the Comatula from the researches of Wyville Thompson does not point to the evolution of the Crinoids from the lower Radiates, the Acalephs, and further on from the Hydra? From the researches of Müller, Professor Agassiz and Mr. A. Agassiz, the embryos of the three classes seem readily homologized, and the forms of the embryo of the starfish which so strikingly resembles some worms, such as *Sipunculus*, *Balanoglossus* and *Nemertes* for example, are perhaps the result of similar modes of life, and not of genetic significance; farther than that they possibly indicate a protozoan origin. Again, the inadequacy of the author's knowledge of the invertebrates is conspicuous in the statement on page 44 that the "centipedes, insects and spiders are joined in one division, Tracheata," when any text book would have told him that the spiders do not have tracheæ. While, as he says, the Myriopods are composed of numerous segments, "in the insect we can distinguish only three segments known as head, thorax and abdomen." . . . "So in the Arachnida we find only two segments [!!]." A moment's glance at a specimen would have saved such a sad blunder. The matter is scarcely mended by the statement on the next page that "the numerous segments of which the immature insect and spider are composed gradually coalesce, until finally the perfect insect exhibits only three pieces, the spider two."

Though the portion on the invertebrates is often weak and faulty, the remaining chapters seem to be more carefully prepared, though the tone of the book, like Hæckel's, is that of an advocate, the adverse facts being kept in the background. Read with due caution, the book is a fair résumé of the opinions of many able naturalists as to the probable mode of development of man and the lower organisms.

ILLUSTRATIONS OF NORTH AMERICAN MOTHS.*—This is a valuable work and worthy of all encouragement, as it gives systematic descriptions (compiled when the author has not had specimens) of the North American (north of the Mexican boundary) species of two extensive and most interesting groups of moths. It offers good

* Illustrations of the *Zygænidae* and *Bombycidae* of North America. By R. H. Stretch. Vol. 1, parts 1-5. San Francisco, 1872. 8vo. Each part 32 pages. Price, uncolored, 75 cents a number; colored, \$1.00. Send subscriptions to author, or the Naturalists' Agency.

figures of species (with cuts showing the venation of many genera), for the most part never before illustrated, or those only figured in costly works. The "Illustrations" will probably extend to about 30 parts, each containing one or more colored plates. Many new Californian species, some of striking interest, are already figured, with good descriptions both of the adult and the larva. Among the most important are three new species of *Alypia* from California; four species of a beautiful new genus, *Kodiosoma*, said to be allied to *Phragmatobia*, the larva of which is said by Dr. Behr to bear "a striking resemblance to that of *Syntomis* and the cocoon to that of *Halesidota*; several new species of that elegant genus *Arctia*, two remarkable species of *Sthenopis*, a new form allied to *Hemileuca Maia*, and a new *Gastropacha*, and *Notodonta*.

The author shows quite conclusively that *Epicallia guttata* is but a variety of *E. virginalis*, as the larvæ of the two forms do not vary.

We also have a description of the larva of *Arachnis picta*, with an interesting account of its habits. The account of the singular genus *Phryganidia*, regarded as a *Psycid* by the reviewer, is considered by Mr. Stretch as probably a *Zygænid*, as "the transformations of *P. Californica*, on which this genus is founded, is so dissimilar to those of the true *Psychiinae*, that I remove the genus to its present position though with some hesitation, and chiefly because I feel unable to assign it a more satisfactory position. Not only does the larva, which has some resemblance to *Eudryas* construct no 'sac,' but it does not even construct a cocoon of any kind, and the pupa is naked and suspended by the tail." We had compared this form with the European genus *Heterogynis*, but the author remarks that the latter is removed by many European writers to the *Zygænidæ*. As the larvæ are abundant, sometimes stripping live oaks of their foliage, we hope to receive specimens of the insect in all its stages and study it anew. The larva of *Halesidota Agassizii* is described for the first time, and that of *Drepana siculifer* noticed briefly.

As to the specific distinctness of *Eupupia Americana* and *E. caja*, we are now inclined to regard the two forms as climatal varieties of a single circumpolar species which runs down both sides of the American continent and on the European side of the eastern hemisphere.

As we are writing this notice, Part V comes to hand, with an excellent plate on which are figured three species (one new) of

Leptartectia, an interesting new genus, of the transformations of which we shall eagerly await information.

We hail with pleasure the appearance of this first work on Californian insects by a native entomologist, and wish it every success.

FOURTH REPORT OF THE PEABODY ACADEMY OF SCIENCE.*—This report is mostly occupied with original papers in natural history, representing the work done in the museum or upon specimens contained in its collections. In his paper entitled "Synopsis of the Family Heteropygii," Mr. Putnam gives a detailed account of this interesting family, represented by the Blindfish of Mammoth Cave, and its allies found in certain subterranean streams and wells and rice ditches of the Southern states, of which a popular account has been given in this journal.

The paper by Mr. Scudder, entitled "A Systematic Revision of some of the American Butterflies; with brief notes on those known to occur in Essex County, Mass.," will afford food for thought to entomologists, and will interest European as well as American naturalists. This important essay "gives a digest of the results reached by a critical examination of the structural features of many American butterflies—principally those of New England. The earlier stages of these insects, as well as the perfect forms have been subjected to careful study." Some sweeping changes have been made by the author both in the classification and synonymy of this important group, based on more thorough study, we venture to say, than has ever before been given to the group. We deem this paper one of the most important contributions to entomology that has appeared for several years.

In the succeeding short papers by Dr. Packard are descriptions of a few new moths from New Mexico and California, and a "List of the Coleoptera collected in Labrador," the specimens having been identified by Dr. Horn.

Appended to the report is the "Record of Entomology for the year 1871." From it we learn that thirty native entomologists have contributed entomological notes and papers during that year. This record is invaluable to entomologists, as showing what work has been done both in America and Europe on our native species.

* Fourth Annual Report of the Trustees of the Peabody Academy of Science, for the year 1871. Salem, 1872. 8vo, pp. 147. Price 75 cents.